

Fisheries Service
FY 2015 Budget Report
to the Sport Fisheries Advisory Commission
October 2015



Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor
Mark J. Belton, Secretary
Mark L. Hoffman, Acting Deputy Secretary

INTRODUCTION

The Fisheries Service's mission is to assess, protect, conserve, fairly allocate, and promote the sustainable utilization of wild and farm-raised fish resources of Maryland for balanced ecological and socio-economic benefits. This is accomplished through scientific investigation, application of data, and proactive involvement with an informed citizenry. Fisheries Service's responsibilities fall into four core functions:

- 1) Protect, conserve and enhance fisheries resources.
- 2) Provide and enhance fishing opportunities, including access.
- 3) Provide sustainable economic opportunities.
- 4) Promote and protect fisheries resources through public outreach and education.

Revenue from sport fishermen provides funding for almost half of all fisheries programs in Maryland. This is from the sales of fishing licenses, gasoline sales surcharges and a federal excise tax on sport fishing tackle and related equipment. Other fund sources include general funds from state taxpayer dollars, commercial license sales, state reimbursable funds such as Maryland Department of Transportation (MDOT), and grants from federal taxpayer dollars.

Natural Resources Article § 4-745 requires the Maryland Department of Natural Resources (MD DNR) to publicly report annually the amount of sport fishing license revenues credited to and expended from the Fisheries Research & Development Fund (FR&D). In the annual preparation of plans to expend sport fishing revenues credited to FR&D, MD DNR is also required to solicit the advice and opinions from the Sport Fisheries Advisory Commission, representative fishing and boating associations, and other interested parties. The reporting requirement is different for nontidal sport fishing license fees. For sport fishing fees associated with the nontidal fund known as the Fisheries Management and Protection Fund (FM&P), MD DNR is required to "publicly report annually the amounts collected and the expenditures."

Because MD DNR would not be able to manage the State's diverse and high quality fishery resources without revenue from fishing licenses, it is vital that anglers understand the importance of their contribution and how their license dollars are used. MD DNR is committed to informing sport fishermen and providing a comprehensive report on all sport fishing license fees and other revenue sources. This report meets statutory reporting requirements, but more importantly, it is intended to provide information which helps anglers and the public understand the magnitude of their contributions and the importance of these contributions to funding programs which benefit both fisheries resources and the sport fishermen who use those resources.



BUDGET

Reporting Period and Budget Terminology

This report provides budget information for revenues and expenditures during fiscal year 2015 (FY 2015), the most recently completed fiscal year. FY 2015 was July 1, 2014 through June 30, 2015. Sport fishing license sales reported are for calendar year 2014 since Maryland sells sport fishing licenses by calendar year, and 2014 is the most recently completed year.

In order to understand the information in this report, here are a few terms you will need to know:

- **SPECIAL FUNDS** – revenue from recreational fishing license sales, commercial fishing license sales and oyster bushel tax, aquaculture fees, gasoline sales surcharges (see explanation under Revenues), and agreements with non state organizations (i.e. private company’s donation for Atlantic sturgeon restoration). Recreational tidal license sale and fee revenues are deposited into the Fisheries Research and Development Fund (FR&D). Nontidal license sale revenues are deposited into the Fisheries Management and Protection Fund (FM&P).
- **FEDERAL FUNDS** – revenue from a tax on sport fishing tackle purchases (Wallop-Breaux), and federal partner grant awards from federal taxes.
- **GENERAL FUNDS** – revenue from State taxes.
- **REIMBURSABLE FUNDS** – revenue from Maryland State agencies such as Maryland Department of Transportation (MDOT).



License Sales, Revenues and Expenditures

A. License Sales

Table 1 shows calendar year recreational license sales from 2010 to 2014. License changes, including the comprehensive Coastal & Bay fishing license, short term licenses expanded to 7 days, creation of separate trout stamp for nonresidents, and Maryland Saltwater registration, were added in 2011. The percent change in license sales from 2013 was calculated to show recent changes. Including angler registrations and tidal and nontidal fishing licenses, there were 302,612 unique anglers in Maryland in 2014. Twenty seven percent of these unique anglers are nonresidents. This does not include anglers less than 16 years of age and/or individuals who fish on free fishing days. There were also 54,900 unique recreational crabbers of which 14% are nonresidents.

Table 1. Maryland recreational license sales by calendar year

FISHING STATISTICS BY LICENSE YEAR	2010	2011	2012	2013	2014	%Change from 2013
RESIDENT NONTIDAL	111,241	105,893	108,600	112,919	115,525	2.3%
NON RESIDENT NONTIDAL	11,625	11,259	11,289	10,907	11,379	4.3%
3 DAY NONTIDAL	8,230	6,623	6,344	6,885	6,810	-1.1%
7 DAY NONTIDAL (5 Day prior to 2011)	8,065	8,175	8,094	8,695	9,190	5.7%
TROUT STAMP	56,247					
RESIDENT TROUT STAMP (New 2011)		44,187	46,744	48,319	48,266	-0.1%
NON RESIDENT TROUT STAMP (New 2011)		6,827	6,986	6,724	6,541	-2.7%
NONTIDAL BLIND	107	104	101	82	87	6.1%
SENIOR CONSOLIDATED LICENSE	22,147	23,224	24,675	25,985	26,216	0.9%
RESIDENT BAY (and Coastal) SPORT	89,985	93,074	94,291	101,077	105,901	4.8%
NON RESIDENT BAY (and Coastal) SPORT	22,471	21,011	20,937	21,045	20,155	-4.2%
5 DAY BAY SPORT	15,352					
RESIDENT 7 DAY BAY AND COASTAL SPORT (New 2011)		7,032	6,410	7,227	7,395	2.3%
NON RESIDENT 7 DAY BAY AND COASTAL SPORT (New 2011)		17,274	16,880	17,289	17,126	-0.9%
PLEASURE BOAT DECAL	46,886	48,584	49,350	47,086	47,708	1.3%
BAY (and Coastal) SPORT BLIND	158	160	122	70	76	8.6%
BAY AND COASTAL SPORT REGISTRATION (New 2011)		58,683*	34,296	43,160	27,365	-36.6%
RECREATIONAL CRABBING	42,186	44,478	44,981	39,737	45,599	14.8%
NON RESIDENT RECREATIONAL CRABBING	7,181	6,745	6,359	5,272	4,649	-11.8%
RECREATIONAL CRABBING BOAT	4,297	4,645	5,078	5,985	5,305	-11.4%
PRIVATE WATERFRONT CRAB POT REGISTRATION					2,584	

* Includes Potomac registrations.

The following licenses are issued by the Department for recreational fishing businesses and contribute to the recreational license revenue.

Table 2. 2014 MD recreational fishing business license sales and revenue

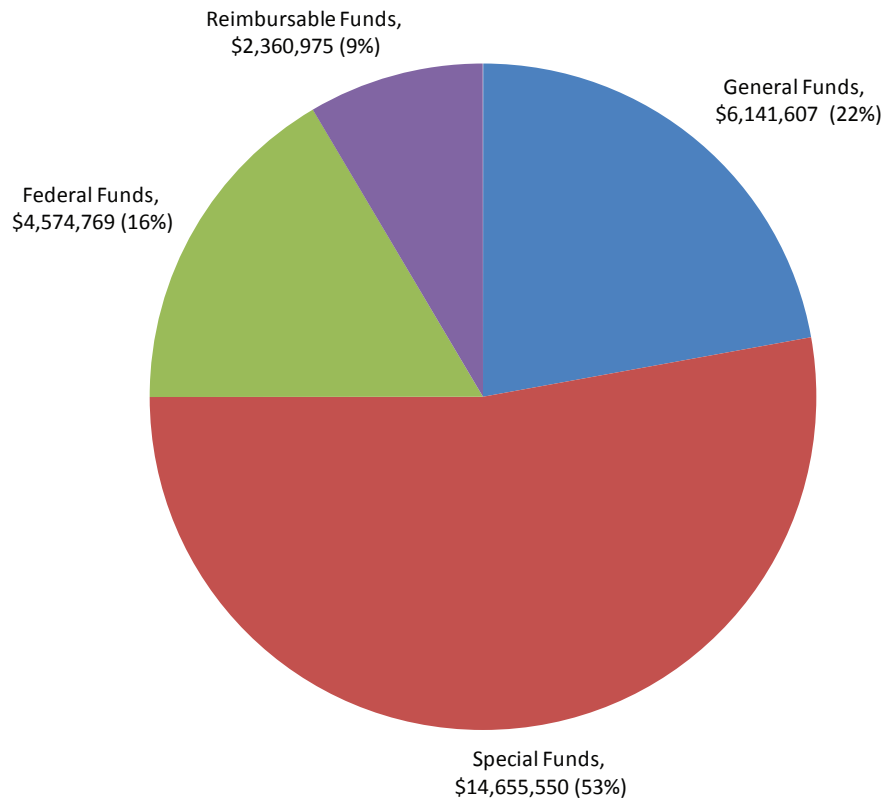
License Type	Total Sales	Total Revenue
Fishing Guide with Tidal	19	\$ 1,100
Limited Fishing Guide	4	\$ 250
Freshwater Fishing Guide	44	\$ 1,210
Commercial Fishing Pier License	3	\$ 870
Bay & Coastal Charter Boat 6 Plus	128	\$ 36,830
Bay & Coastal Charter Boat Up to 6	238	\$ 57,120



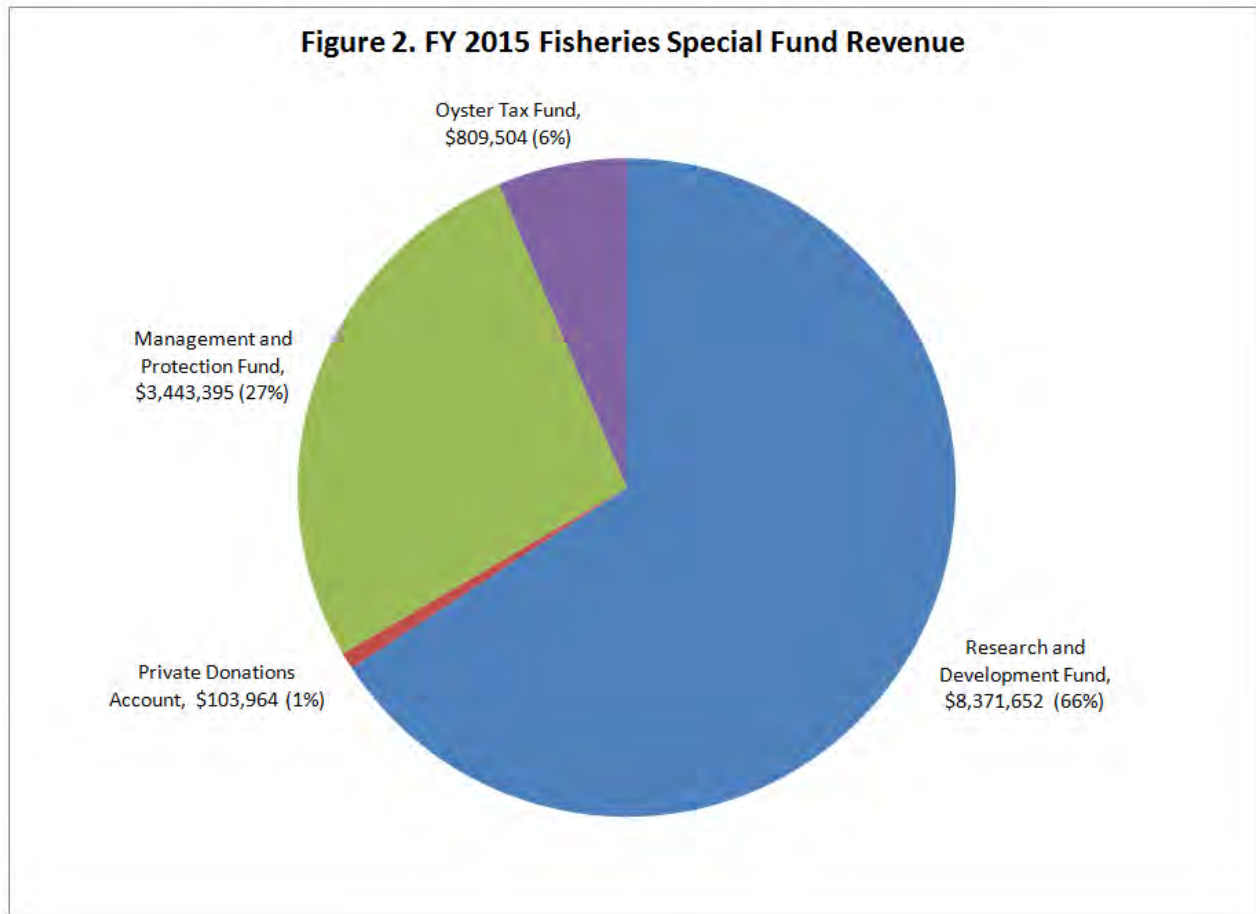
B. Revenues

Total FY 2015 Fisheries Service revenues (all fund sources) were \$27,732,901 and are broken down as follows: 53% special fund revenue; 16% federal fund revenue; 22% general fund revenue; and 9% reimbursable fund revenue (Figures 1 and 2). FY 2015 Fisheries revenues are \$809,129 lower than FY 2014.

Figure 1. FY 2015 Fisheries Service Revenue



The breakdown of Special Fund revenues into the component sources is shown in Figure 2. Commercial and recreational tidal license sale and fee revenues are deposited into the Fisheries Research and Development Fund (FR&D). Nontidal license sale revenues are deposited into the Fisheries Management and Protection Fund (FM&P), and dedicated oyster fees are deposited into the Oyster Tax Fund.



Fisheries Service began FY 2015 with a balance of \$2,870,758 and \$876,141 in the FR&D and FM&P funds respectively. Total FY 2015 revenue credited to these funds included \$8,371,652 to FR&D and \$3,443,395 to FM&P (Table 3).

Table 3. Fisheries Service - FR&D and FM&P Funds			
FY 2015			
	Fisheries Research and Development Fund	Fisheries Management and Protection Fund	Total
Beginning Balance	\$2,870,758	\$876,141	\$ 3,746,899
Revenues	\$8,371,652	\$3,443,395	\$ 11,815,046
Gasoline Sales Surcharge& interest	\$1,895,103	\$31,933	\$ 1,927,036
Total Funds Available	\$13,137,512	\$4,351,469	\$ 17,488,981
Summary of Expenditures			
Fisheries Service	\$7,507,879	\$3,048,431	\$ 10,556,310
Non-Fisheries Service			
NRP - Field Operations	\$2,389,164	\$ -	\$2,389,164
Licensing	\$500,000	\$288,135	\$788,135
Finance & Administrative Service	\$316,200	\$130,100	\$446,300
Information Technology Service	\$290,700	\$119,600	\$410,300
Office of Secretary	\$206,600	\$85,000	\$291,600
Office of Attorney General	\$142,100	\$127,400	\$269,500
Human Resource Service	\$87,900	\$36,100	\$124,000
Office of Communications	\$56,600	23,300	\$79,900
Total Expenditures	\$11,497,143	\$3,858,065	\$ 15,355,208
(Revenue + Surcharge) - Expenditures	\$(1,230,388)	\$(382,737)	\$ (1,613,126)
Ending Balance (Total Funds Available – Total Expenditures)	\$1,640,369	\$493,404	\$ 2,133,773



C. Expenditures

In FY 2015, Fisheries Service expended (all fund sources) a total of \$ 28,395,571 (Figure 3). Included in this total is \$4,798,898 of Fisheries Service funds that were provided to other MD DNR Units in support of Fisheries Service's mission (Figure 4), consistent with many of the priorities identified in the 2008 report of the Task Force on Fisheries Management. This includes but is not limited to: enforcement of fisheries management rules (i.e. Natural Resources Police); habitat preservation and restoration (i.e. water quality monitoring, benthic habitat surveys, prioritization of critical habitats, environmental review), legal issues, and licensing services. It is important to note that the Office of the Secretary sector includes several MD DNR units: the Office of Attorney General; Finance and Administration Service; Human Resources Service; Information Technology Service; and Office of Communication.

MD DNR expended a total of \$11,497,143 and \$3,858,065 of FR&D and FM&P funds, respectively, in FY 2015. FY 2015 expenditures of FR&D and FM&P funds exceeded FY15 revenues credited into these funds by \$1,613,126. The FY 2015 end of year balance of FR&D and FM&P funds is \$2,133,773.

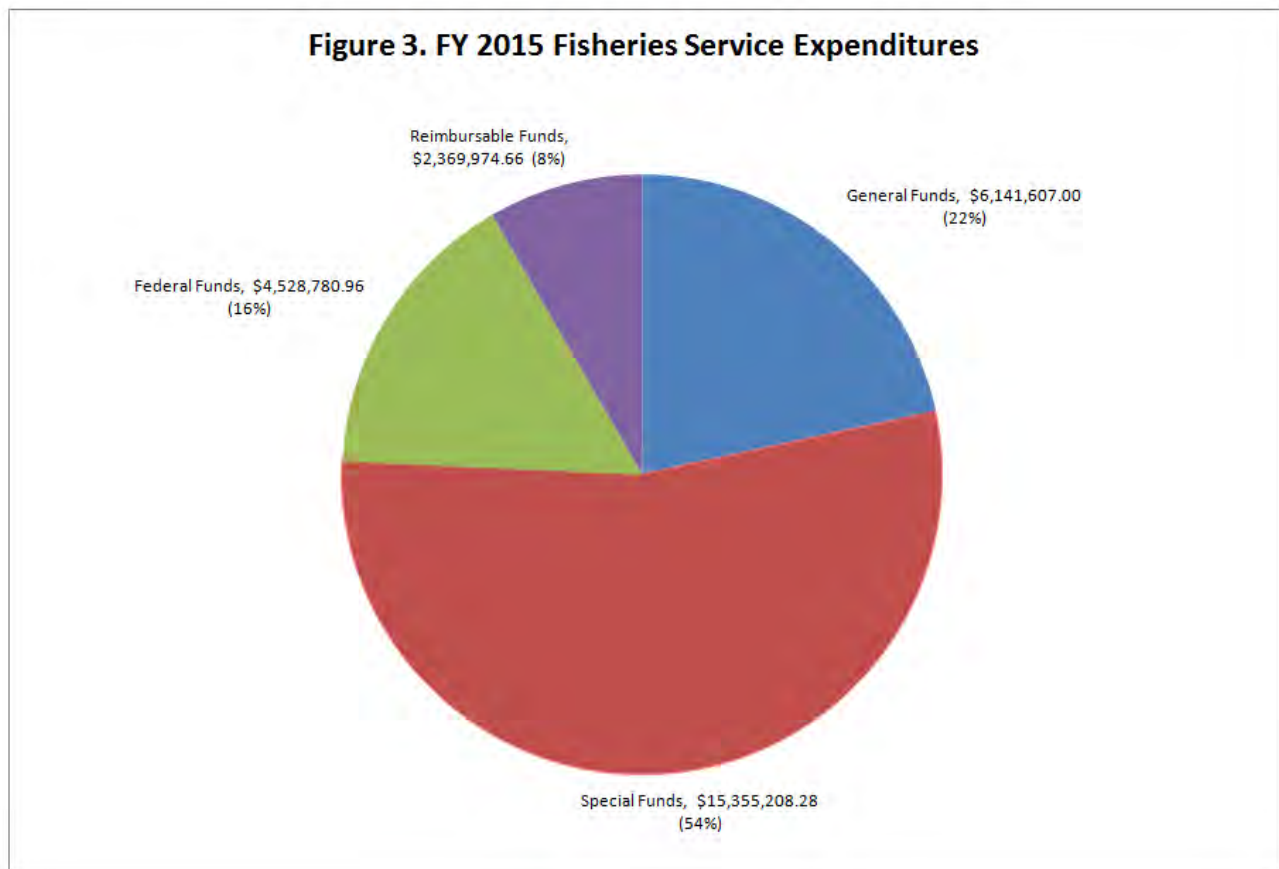
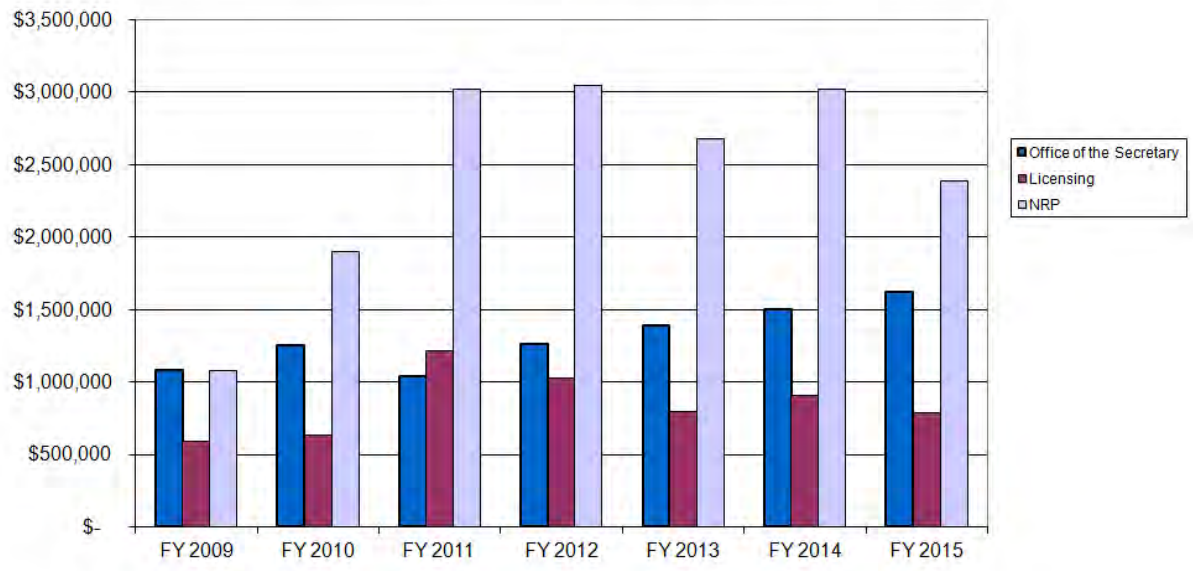


Figure 4. FY 2009 - 2015 Special Fund Transfers to Other DNR Units in Support of Fisheries Service Mission



SUMMARY

As this report demonstrates, MD DNR's ability to fund programs to assess, protect, conserve, fairly allocate and promote the sustainable utilization of wild and farm-raised fish resources of the State for balanced ecological and socio-economic benefits is not possible without anglers who support this work by paying for fishing licenses, fees and excise taxes. These revenues pay for an extensive and diverse suite of activities which meet the four core functions of the Fisheries Service:

- 1) Protect, conserve and enhance fisheries resources.
- 2) Provide and enhance fishing opportunities, including access.
- 3) Provide sustainable economic opportunities.
- 4) Promote and protect fisheries resources through public outreach and education.

In FY 2015, expenditures of FR&D and FM&P funds exceeded revenues by \$1,613,126. A portion of the FY 2015 beginning balance of FR&D and FM&P Special Funds were used to cover these expenses. The current level of services MD DNR provides to fulfill the mission of Fisheries Service will only be sustainable if there is an increase in revenue and/or implementation of more cost efficient operations.

With a FY 2016 beginning balance of \$2,133,773 million in FR&D and FM&P funds, the MD DNR will have sufficient funds to maintain the current level of Fisheries Service related services in FY 2016. However, without an increase in revenue, implementation of more cost effective operations and/or reduction in services, there will not be sufficient funds to maintain all of these services by FY 2017.

In FY 2016, Fisheries Service will focus on maintaining the operations performed in FY 2015 as well as the priorities listed in Appendix 1. Appendix 2 highlights some of the activities Fisheries Service accomplished during FY 2015.

The next budget report for Fisheries Service is scheduled for October 2016, and will focus on fiscal year 2016 which will close on June 30, 2016.

Fisheries Service is committed to providing a comprehensive annual report on sport fishing revenues and expenditures. We are always interested in hearing from anglers and the general public about issues of concern or new project ideas that you believe we should consider pursuing as we work to ensure Maryland's fisheries resources are sustainably managed for the benefit of those who enjoy them today as well as future generations.

If you have any questions or input regarding this budget report, please contact Karen Knotts, MD DNR Fisheries Service, Communications and Outreach Division Manager at karen.knotts@maryland.gov or 410-260-8294.



SFAC Commissioners

In June 2012, Fisheries Service announced the appointment of seven new members to the Sport Fisheries Advisory Commission (SFAC). Due to term limitations, several new appointments will be made during FY16.

The SFAC advises the Department on recreational fishing issues and is comprised of individuals from across the State that represent recreational fishing interests.

Public participation is vital to the Department's ability to successfully conserve, manage and restore Maryland's fisheries resources. Members of our advisory bodies serve as your representatives and we invite you to contact them with questions, concerns and/or suggestions about fisheries issues. Visit <http://www.dnr.maryland.gov/fisheries/fmp/index.asp> for the list of Commissioners who advise the Department on your behalf. Simply click on Sport Fisheries Advisory Commission to find contact information and affiliation of each member. You can also keep up with Commission activities with the meeting agendas, materials and summaries which are posted in conjunction with the quarterly SFAC meetings.



Left to Right: Scott Sewell (proxy for Roger Trageser), Micah Dammeyer, Dr. Ray Morgan, Vince Ringgold, Kate Chaney, Val Lynch, Tim Smith, Dave Sikorski (Vice Chair), Phil Langley, Bill Goldsborough (Chair), Mark DeHoff, James Womack, Ed O'Brien, Jim Gracie (Outgoing Chair), (missing Beverly Fleming)

Sport Fisheries Advisory Commission Recognizes Former Fisheries Director Thomas J. O'Connell in FY 2015

At the June 2015 SFAC meeting, Commissioners recognized former Fisheries Service Director Tom O'Connell. Commissioners passed a motion to write a letter to thank Tom for his service to the Department and the Commission. A copy of that letter appears below.



Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor
Mark J. Belton, Secretary
Mark L. Hoffman, Acting Deputy Secretary

September 23, 2015

Thomas J. O'Connell
15935 Brooks Haven Drive
Goldsboro, MD 21636

Dear Tom,

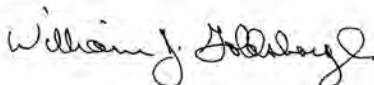
On behalf of the Sport Fish Advisory Commission, I want to thank you for your extraordinary efforts managing Maryland's fisheries and your tireless work helping the Commission fill a meaningful role in that process. The Commission was very sorry to see you leave the Department, and it voted unanimously at its last meeting to extend this heartfelt thank-you.

Among Commission members the collective experience as stakeholders involved in Maryland fisheries extends for many decades. Some members have worked with eight or more DNR Fisheries Directors, and there have been some very good ones. But none have put as much emphasis on stakeholder input through the commission process as you have. Under your leadership, the process was upgraded and respected, authoritative information was always made available, and Commission input was actively sought and always given full consideration.

From a stakeholder perspective, the one thing I must emphasize is your unwavering fairness. Maryland fishery stakeholders are very diverse, and you always wanted to hear every viewpoint and never took sides. As the SFAC liaison to the Tidal Fisheries Advisory Commission I observed the same high standard there. The inclusiveness and transparency you exhibited to all fishermen set a precedent that I believe will stand for a long time.

We all wish you well in your future endeavors, and we hope to cross paths with you in the future, both professional and personal. You have our highest admiration.

Best regards,



William J. Goldsborough, Chairman
Maryland Sport Fish Advisory Commission

cc: SFAC Commissioners
SFAC proxies
SFAC interested parties
DNR Assistant Secretary Dave Goshorn

Tawes State Office Building – 580 Taylor Avenue – Annapolis, Maryland 21401
410-260-8DNR or toll free in Maryland 877-620-8DNR – dnr.maryland.gov – TTY Users Call via the Maryland Relay

Appendix 1. Fisheries Service FY 2016 Priorities

The primary focus of the Unit over the coming year will be on continuing operations. In addition, we will make as much progress on priority issues or activities as resources allow. A list of priorities by Fisheries Service 4 core functions is included below. These are not Fisheries Service's only priorities, but are the ones that focus on sport or charter fishing in some way.

PROTECT, CONSERVE AND ENHANCE FISHERIES RESOURCES

- a. **Priority Task** – Support and work with state and federal partners to implement state management of the National Marine Fisheries Service's Marine Recreational Information Program's Access Point Angler Intercept Survey (MRIP/APAIS). MRIP provides state and federal managers with estimates of recreational catch data for estuarine and marine fisheries. In order to supplement fishery information on Chesapeake Bay striped bass (*Morone saxatilis*), the Department also conducts a specific study to characterize the size, age and sex composition of striped bass harvested during the spring recreational trophy season and to develop a time-series of catch per unit effort (CPUE) of the spring trophy fishery. This dockside creel survey also collects information to characterize the recreational angler population. Data collected includes catch and demographic information.
Desired Task Achievement Date – March 1, 2016
Obstacle – Administrative/hiring hurdles and timeliness of available funds. Delays in data availability.
Solutions – Continue to communicate and participate in program development.

- b. **Priority Task** – Continue to develop Chesapeake Bay specific biological reference points (BRP) for striped bass. The Striped Bass Management Board is expected to review the status of the stock as well as reference points for the Chesapeake Bay proposed by the Striped Bass Technical Committee and make recommendations in late 2015 or early 2016.
Desired Task Achievement Date – Ongoing
Obstacle – Inter-agency coordination and agreement
Solutions – Continue working in concert with the ASMFC's Atlantic Striped Bass Management Board to refine and adopt new Chesapeake Bay specific reference points which will allow Bay jurisdictions to coordinate management for the Bay resident stock independently of the coastal migrant stock.

- c. **Priority Task** – Streamline fisheries penalty system. In partnership with Natural Resources Police, integrate enforcement, court and Departmental databases. This will enhance DNR's ability to effectively suspend individuals who do not answer to citations for fisheries violations if they fail to appear in court for their scheduled hearing.
Desired Task Achievement Date – Ongoing
Obstacle – District Court and DNR Units including Fisheries, Licensing and Registration and Natural Resources Police use different systems and databases. The two biggest hurdles are: 1) DNRid number (a person's unique identifier in DNR licensing and registration system), is not recorded on citations, nor are they part of the District Court record. 2) Getting information fed directly into a system from District Court seems unlikely - not impossible, just unlikely.
Solutions – Need to develop a way to pull information from the District Court database to a database housed within DNR that would 1) Automatically put a hold on a person in COMPASS (licensing and registration system) and/or 2) be accessible to Fisheries and NRP staff. As NRP is beginning to transition to electronic ticketing, staff is working on possible solutions via this new system.

- d. **Priority Task** – Finalize and implement July 2014 draft comprehensive Fish Health Management Policy to ensure health of Maryland fish and protect against potential disease introductions from all sources (e.g. bait, pet trade, hatcheries, stocking). Develop and implement baseline fish health survey for Chesapeake Bay and ultimately all state waters to understand current status, provide early warning of potential impacts and inform

proactive land use decisions sustaining fishable waters.

Desired Task Achievement Date – Ongoing, dependent on authority

Obstacle – Funds, staffing, constituents, authority

Solution – Phased implementation following stakeholder consultations; spread cost over several years, and as budget allows; seek positions and share duties across existing related positions; review existing authority and seek additional as needed.

- e. **Priority Task** – Continue work towards meeting the Chesapeake Bay Agreement’s oyster restoration goal of 10 restored oyster tributaries (5 in MD and 5 in VA) by 2025.

Desired Task Achievement Date – 2025

Obstacle – Continuing to obtain funding to purchase substrate and to plant oysters.

Solution – Continue working with DBM and the legislature to obtain adequate Capital funds.

- f. **Priority Task** – Maintain coordinated baywide sustainable blue crab fishery management program. Future efforts include implementing procedures that increase accountability and accuracy of commercial and recreational harvest.

Desired Task Achievement Date – Ongoing

Obstacle – Currently, Maryland’s recreational crabbing license structure does not provide complete information on how much participation there is in Maryland’s recreational blue crab fishery. This is due to a relatively large amount of harvest that is allowed for unlicensed crabbers as well as the large number of complimentary crabbing licenses that are issued with the Consolidated Bay Sport Fishing license. This lack of accountability in the recreational crab fishery makes it difficult to get an accurate estimate of recreational harvest. Another challenge is the coordination of inter-jurisdictional management and data sharing, and funding.

Solution – Revise the recreational blue crab license structure so that it provides accurate information on how many participants there are in the fishery and provides a solid foundation for reliably estimating recreational crab harvest. Continue to work and participate with Bay partners, and seek potential funding opportunities.

- g. **Priority Task** – Remove high priority fish blockages. Provide for fish passage at dams, and remove stream blockages to restore passage for migratory and resident fish. Restore and enhance river/stream connectivity.

Desired Task Achievement Date – Ongoing. Continue to work towards the fish passage outcome in the 2014 Chesapeake Watershed Agreement.

Obstacle – Progress is slow because many of the blockages are located on private property and landowners do not have the money or incentive to remove the blockage. Finding funding sources for design and monitoring projects is limiting.

Solution – Coordinate and combine forces with MDE programs to remove high priority fish blockages that are in poor condition or have sedimentation concerns. Create a tax incentive program for the landowner to facilitate removal. Continue to apply for grants to fund removal projects.

- h. **Priority Task** – Reduce mortality in catch and release black bass tournaments.

Desired Task Achievement Date – Live well study work will continue until 2017. Annual summaries of work will be included in outreach material for Maryland’s anglers. Infrastructure to deliver material to black bass anglers has been developed and will be utilized in 2016.

Obstacle – A significant percentage of fishing effort for tidal water largemouth bass occurs as tournaments. Even though handling and live wells have improved bass survival over time the cumulative effective of many tournaments can be high enough to impact populations negatively. Poor water quality and high temperatures can require altering handling techniques to ensure optimum survival.

Solution – Fishing tournament regulations, videos and safe handling instructions are being used by tournament anglers. Annual summaries of work will be provided to anglers using the delivery infrastructure to include: 1) emails for tournament directors; 2) emails to established list of anglers who routinely target black

bass in Maryland; 3) social media; and 4) updates to the 2016 Sportfishing Guide. Information from the live-well study will help to refine techniques to improve bass survival.

- i. **Priority Task** – Implement measures to stabilize and enhance tidal water largemouth bass fishery. Gather public input on catch-and-return angling for black bass. Conduct habitat improvement to help reestablish lost spawning habitat by installing reef balls in Smoots Bay on the Potomac River.
Desired Task Achievement Date – Survey of angler input - FY 2017. Habitat improvement will be ongoing.
Obstacle – Input from anglers requires contact information usually gleaned from license sales. It is difficult to target black bass anglers using the tidal license database since fishing preferences are not known and the tidal license covers tidal rivers (the study area) and the Chesapeake Bay, so the possibility of getting anglers who do not use this fishery is high. Reef balls for habitat improvement are expensive so funds must be acquired. Close coordination of the project will be needed to make sure that there is consensus among the many stakeholders affected by the project.
Solution – Use outreach to gain funding and keep all stakeholders informed. Use outreach other than tidal license database to identify target anglers for survey on catch-and-return preferences. Use the Smoots Bay project as a demonstration project to show how steps can be taken to reestablish submerged aquatic vegetation (SAV). Supplemental stocking of largemouth bass will be implemented to provide some enhancement to populations as habitat improvement is going on. As habitat and spawning habitat improve, supplemental stocking will be reduced or curtailed.
- j. **Priority Task** – Expand research efforts to investigate occurrence/extent of fluvial brook trout populations statewide. Efforts will be expanded initially from the Savage River watershed in Garrett County to the Gunpowder Falls in Baltimore County and Deer Creek in Harford County.
Desired Task Achievement Date – December 2017
Obstacle – Determining the presence and extent of fluvial brook trout populations statewide will add additional responsibilities/workload to Fisheries staff.
Solution – Develop a partnership with an interested University to have a portion of the work conducted by a graduate student(s). In addition, work with staff from DNR Resource Assessment Service to address increased workload.
Obstacle – Funding for equipment and staffing will need to be accommodated in the annual budget and funds are limited due to current and anticipated budget reductions.
Solution – Procure at least a portion of funds through federal grant programs and from donations from interested user groups (i.e. Trout Unlimited).
- k. **Priority Task** – Reduce impacts of the Upper Potomac River Commission Wastewater Treatment Plant (UPRC WWTP) discharge to the North Branch Potomac River at Westernport, MD.
Desired Task Achievement Date – Ongoing
Obstacle – The UPRC WWTP receives waste from the papermill (Verso Corporation) in Luke. At times turbidity, suspended solids and color are so high that treatment is ineffective causing significant impacts to water quality in the river. DNR has worked to develop high quality trout and bass fisheries in this part of the river but the river often becomes opaque and unfishable for 10-15 miles down river due to this discharge.
Solution – Inland Fisheries opened a dialogue with the papermill to address discharge limits. A new discharge permit was issued in FY2015 and Fisheries will work with MDE to evaluate the effectiveness of those limits.
Obstacle – This section of the river is currently protected as a Use Class I-P (Water Contact Recreation, and Protection of Nontidal Warmwater Aquatic Life – defined in MD’s Water Quality Standards). This designation does not afford the needed thermal protection for the sport fish populations that have developed in this section of the river.
Solutions - Continue work with MDE and the UPRC WWTP to determine if new discharge limits are too high to protect the existing fish populations. If discharge limits are too high, Fisheries will work coopera-

tively with MDE and plant operators to find solutions and possible funding to upgrade plant infrastructure to reduce discharge parameters to acceptable levels.

- l. **Priority Task** – Continue to focus on water quality and habitat issues negatively affecting important inland fisheries.

Desired Task Achievement Date – Ongoing

Obstacle – Major tailwater trout fisheries are threatened by competing water uses and changing water appropriation strategies by the impoundment operators.

Solutions – Use data from continuous and real-time data sondes to negotiate for discharge protocols which maintain acceptable temperatures and flow regimes for trout populations. Continue to participate in the North Branch Advisory Group meetings. This is an ad hoc group consisting of the Army Corp of Engineers, the Upper Potomac River Commission, the Interstate Commission on the Potomac River Basin, Trout Unlimited, the Western MD Guides Association, white water paddling interests and others who negotiate for annual discharge schedules which support their interests. Stay engaged with the Baltimore City Public Works and Washington Suburban Sanitary Commission to assure similar conditions are maintained for reservoirs in central Maryland.

Obstacle – Land use changes/patterns are governed mainly by local planning and zoning agencies which do not always consider the impacts of development on water quality, aquatic habitats and resources.

Solutions – Work closely with other DNR Units (e.g., Integrated Policy and Review and Resource Assessment Service) to identify quality resources and resources at risk. Use this information to proactively educate communities and local governments on the negative impacts of development on aquatic ecosystems.

- m. **Priority Task** – Develop Inland Temperature and Water Quality Database

Desired Task Achievement Date – Initiated January 2015: data input is ongoing

Obstacle – A tremendous amount of historical stream temperature data exist in individual data files specific to a year and site and in a variety of formats. These must be entered into standardized spreadsheets and uploaded to an MS Access database developed for these data. Some files may need to be converted from old formats (Lotus, .txt, or proprietary software).

Solutions – Data entry should start with recent data which are mainly in Excel and can be most easily converted to standardized format. Old files are important because they provide the most accurate baseline data for assessing effects of land use and climate change on water quality. Conversion of these files may require IT assistance.

- n. **Priority Task** – Continue Patapsco River shad and herring restoration project and seek funding to extend the work for five years subsequent to Bloede Dam removal.

Desired Task Achievement Date – No obstacle to continue assessment work through 2017. Dam removal should occur in 2016 and project extension will ideally extend five years post-removal (~2021). Secure funding for additional assessment by summer 2017.

Obstacle – No known funding source currently available.

Solutions – Explore funding extension through Maryland Port Authority mitigation funds or funding related to dam removal habitat restoration. Leverage existing fish production resources and funding programs to continue the stocking component.

- o. **Priority Task** – Support new ASMFC Atlantic sturgeon stock assessment. Findings will determine future conservation strategies. Continue to maintain captive brood population pending stock assessment. Expand and maintain acoustic telemetry arrays in Maryland. Develop breeding and spawning protocol in support of NMFS Section 10 research permit. Evaluate Marshyhope Creek spawning habitat and assess early life history presence subsequent to discovery of mature brood fish in putative spawning areas.

Desired Task Achievement Date – Ongoing, stock assessment scheduled for 2017 completion, Marshyhope

Creek work determined by funding.

Obstacle – NMFS research permit pending for spawning research

Solution – Continue to work with NMFS to secure research permit. Project was awarded NMFS funding to conduct habitat and early life history assessment through June 2018.

- p. **Priority Task** – Work with the Atlantic States Marine Fisheries Commission (ASMFC) and the Mid-Atlantic Fisheries Management Council (MAFMC) on the Comprehensive Summer Flounder Amendment. The amendment will involve a comprehensive review of all aspects of the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP) related to summer flounder. Specifically, the Council and Commission will consider whether modifications to the FMP’s goals, objectives, and management strategies for summer flounder are needed.

Desired Task Achievement Date – 2018

Obstacle – Controversial subject matter including commercial and recreational allocations as well as goals and objective of the plan.

Solution – Maintain communication with stakeholders throughout amendment development.

- q. **Priority Task** – Advise Fisheries leadership and other Maryland representatives on management actions under consideration by ASMFC and the MAFMC. Technical staff will continue ASMFC preparatory meetings before all ASMFC Board meetings to brief Board Representatives regarding potential management actions and technical issues.

Desired Task Achievement Date – Ongoing

Obstacle – None

Solutions – Continue holding ASMFC pre-meetings and maintain communication with Fisheries Service leadership and Maryland representatives.

- r. **Priority Task** – Develop reference points for marine and estuarine forage species, Atlantic menhaden in particular, that reflect their importance for supporting predators that are both gamefish and important food fish.

Desired Task Achievement Date –2017

Obstacle – Requires an ecological viewpoint that isn’t well accommodated in single-species management processes of the ASMFC and the Chesapeake Bay Program. These types of reference points represent relatively new concepts that have not been widely implemented elsewhere.

Solutions – Attempt to lead ASMFC and Bay Program processes developing these reference points to adopt a robust mix of data and model indicators of forage and predator status.

- s. **Priority Task** – Cooperative tasking with National Ocean Service (NOS) / NOAA Chesapeake Bay Office (NCBO)

Desired Task Achievement Date – ongoing

Obstacle – Funding for specific studies aligned between the different fiscal years; agency priorities between national versus state government agencies

Solutions – Flexible out-year funding commitments; flexible administration for each agency and unit driven to achieve healthy aquatic ecosystems. NOAA designation of the Choptank River as a Habitat Focus Area provides an excellent opportunity to collaborate with federal partners and leverage resources.

- t. **Priority Task** – Deep Creek Lake power plant relicensing. The relicensing process will begin within the next year that will establish the water release schedule, lake levels, and duration of any releases. The process begins roughly three years ahead of the expiration of the existing license to allow stakeholders the time necessary to submit their comments and concerns.

Desired Task Achievement Date – 2019

Obstacle – Conflicts exist between landowners on Deep Creek Lake and the surrounding watershed, anglers,

whitewater enthusiasts, state government and industry.

Solutions – Educate stakeholders on the issues. Meet with stakeholders to discuss and develop an approach that will address all of the comments and concerns well ahead of the relicensing.

- u. **Priority Task** – Staff will work with stakeholders to implement the goals, strategies, and objectives of the Deep Creek Lake Watershed Management Plan (Plan) approved October 2014. Specific strategies currently being discussed include addressing the aquatic vegetation problems and a proposal to dredge select coves to improve navigation and decrease nutrient loading.

Desired Task Achievement Date – Ongoing, deadlines are established for each goal, objective and strategy in the Plan.

Obstacle – Implementation for some parts of the Plan will be expensive and funding will need to be obtained. The dredging is expensive and difficult to achieve without causing extensive impacts to the aquatic ecosystem. Some of the aquatic vegetation problems have been caused by invasive species and, once established, these can be costly and extremely difficult to control or remove. Some signatories lack knowledge of methods and procedures to address the priorities.

Solutions – Secure funding. Identify specific groups to achieve goals, objectives, and strategies and educate stakeholders on needs of the Plan. Implement strategies to eliminate the possibility of the introduction of additional invasive species. Provide education for public stakeholders on the environmental factors that face the lake and surrounding watershed.

- v. **Priority Task** - Determine catch-and-release mortality in Mattawoman Creek from recreational angling of largemouth bass.

Desired Task Achievement Date – December 2018

Obstacle – Recreational anglers can impact a fishery and cause about 10 - 15% of caught black bass to die following angling. This percentage can depend on bait type, season, and angling skill. Despite attention to competitive sportfishing, the percentage of fish that die from recreational angling has not been determined in Maryland and should be used when assessing the possible effectiveness of catch-and-return areas or in other aspects of fisheries management.

Solution – Use a combination of angling and electrofishing to estimate catch-and-release mortality by tagging fish and tracking their capture history using incentive based programs.

- w. **Priority Task** - Research northern pike population and angling preferences in Deep Creek Lake to provide information for possible regulation change.

Desired Task Achievement Date – December 2016, although additional time may be needed for additional data collection and public input.

Obstacle – staff time to conduct the work

Solution – combine data collection with other surveys

Obstacle – gaining public input

Solution – use mail-in post cards distributed to local angling shops, parks and social media to gain feedback on the usage of the fishery.

- x. **Priority Task** - Complete 5 year review report for evaluating oyster management. The Department is committed to producing a legislative report that *reviews the effectiveness of the locations of sanctuaries, public shellfish fishery areas, and aquaculture areas every 5 years and to propose changes where needed (COMAR 08.02.01)*. The report will be completed with the guidance of an independent review panel which has been engaged to ensure objectivity and rigor of the report.

Desired Task Achievement Date – July 2016.

Obstacle – staff time to conduct the work

Solution – defer on any tasks that arise during the fiscal year that may distract staff from this priority project.

y. **Priority Task** - Implement FACTSTM electronic harvest reporting and accountability system so that it is available to all commercial fin fisheries and to the blue crab fishery.

Desired Task Achievement Date – January 2016.

Obstacle – Funding. Hesitancy of commercial watermen to use a new system that requires a hail component. The system does not require that fishermen say where they are fishing but it does require a notification when fishermen begin and end their trip.

Solution – Seek external funding sources. Continue outreach and education to commercial watermen and continue to obtain their input on system design.

PROVIDE AND ENHANCE FISHING OPPORTUNITIES, INCLUDING ACCESS

Priority Task – In coordination with state and federal partners, work to maintain and increase the number of publicly accessible areas for sport fishing consistent with the goals of the 2014 Chesapeake Bay Watershed Agreement. Fisheries Service staff lead for public access issues will work cooperatively with DNR Public Access Matrix Team and partner with MDOT, DBED, DOT, SHA, MHT and NPS in support of state initiatives requiring coordinated and improved statewide public access information from Maryland in order to achieve success and meet their established goals. This includes Executive Order 13508, Chesapeake Bay Watershed Agreement, Chesapeake Bay Watershed Public Access Plan, HB797, and DBED/MDOT Destination Initiative, and SHA / MHT / NPS Initiative prioritizing water access in grant programs.

Desired Task Achievement Date – Ongoing

Obstacle – None

Solution – N/A

a. **Priority Task** - Develop coldwater production capacity to levels needed to meet the full trout stocking schedule and eliminate commercial fish purchases. Mettiki Coal LLC hatchery phase I production is underway. If the Phase I production is successful, development of Phase II production facility could meet remaining state needs.

Desired Task Achievement Date – Spring 2016 to complete Phase I full production run. Phase II development is ongoing.

Obstacle – None for Phase I culture. Phase II will require additional funding.

Solution – Identify funding sources to construct Phase II facility and leverage Mettiki Coal Resources.

b. **Priority Task** – Maintain focus on quality and geographic distribution of License Free Fishing Areas. Continue working toward long term goal – that most Maryland residents live within a one hour drive of a site where they have the opportunity to fish recreationally without purchasing a license.

Desired Task Achievement Date – Ongoing

Obstacle – Identifying new areas and assuring that capacity to maintain new sites is in place. Regulation change is required to designate or remove LFFAs.

Solution – Work closely with local jurisdictions and DNR Units, particularly NRP and MD Park Service to monitor performance of current LFFAs and identify new sites.

c. **Priority Task** - Maintain and update the online Angler Access Map on the DNR Webpage

Desired Task Achievement Date – Ongoing

Obstacle – Status of public access sites change without notice. Important information such as condition of parking lots and roads, fee requirements and fishing regulations must be updated continually to insure accurate information for users of Maryland’s fisheries and waterways.

Solution – Need to keep open lines of communications internally, with other jurisdictions and agencies and with anglers. Fisheries staff will need to observe these attributes when utilizing access points and communicate changes to our technical staff as part of their ongoing duties.

d. **Priority Task** – Develop and implement production databases for coldwater and warm water hatcheries.

Stocking databases have been developed for coldwater and warmwater hatcheries. Production database has been developed to the template stage but need to be constructed and implemented.

Desired Task Achievement Date – Spring 2016 for final template

Obstacle – Lack of expertise within Hatcheries Division (assigned staff left state service)

Solution – Backfill Hatcheries Division position responsible for this work (vacancy fill was requested). Seek staff support from Fisheries Service database specialists.

- e. **Priority Task** - Enhance Chesapeake Bay fishing opportunities through development of artificial reefs on permitted fish havens.

Desired Task Achievement Date – Ongoing

Obstacle – MD Artificial Reef Initiative (MARI) permit package (20 original fish reef sites plus the newest Gooses Reef) expired in August 2015.

Solution – Permit renewal request for renewal of MARI permit package through 2021 was submitted July 2015). Once approval is received, continue construction at permitted sites with clean materials such as concrete and quarry rock.

PROVIDE SUSTAINABLE ECONOMIC OPPORTUNITIES

- a. **Priority Task** - Maintain and update the Charter/Guide map on the DNR Webpage

Desired Task Achievement Date – Ongoing

Obstacle – Charter boat Captains and licensed Guides must complete and submit application in order to appear on map. Staff must monitor map to assure all those listed have current license or decal.

Solution – Continue efforts to advertise and increase awareness of this tool. Advertise in the 2015 Fishing Guide and work with DBED/Tourism to advertise the tool in their publications.

- b. **Priority Task** – Continue collaboration with the Sportsmen’s Marketing Initiative, a private/public partnership between the Maryland Sportsmen’s Foundation and MD Department of Business & Economic Development and the tourism industry to promote Maryland as a premier destination to fish & hunt.

Desired Task Achievement Date – Ongoing

Obstacle – None

Solution – N/A

PROMOTE AND PROTECT FISHERIES RESOURCES THROUGH PUBLIC OUTREACH AND EDUCATION.

- a. **Priority Task** – Work to influence state and local planning to consider negative cumulative watershed impacts from development that diminish fisheries and aquatic resources.

Desired Task Achievement Date – Ongoing

Obstacle – Consideration of cumulative impacts of development on aquatic resources is not required for local governments and planners. Means of communicating the risks of development on fisheries en masse and making it stick are elusive.

Solution – Seek opportunities to communicate with local governments/planners about watershed goals for aquatic resources and provide technical support so they can develop comprehensive plans that consider aquatic habitat important to fisheries.

- b. **Priority Task** – Develop angler preference surveys (general statewide preferences and specific surveys for brook trout and tidal black bass management areas) to measure angler usage and preferences for inland fishing opportunities.

Desired Task Achievement Date - A large general survey is scheduled to be conducted through 2016, with a final report due by June 30, 2017. The brook trout survey will be conducted in FY2016 with results due June 1, 2016. The tidal bass survey will be conducted in FY 2016 with results due June 1, 2016.

Obstacle – One single survey method will not reach all anglers. Mail surveys are expensive and do not

reach the intended recipient. Some anglers do not use the internet.

Solutions – Conduct one main survey to determine general angler preferences, habits and expenditures. Use targeted surveys for brook trout and tidal bass where specific management strategies need to be further investigated. To reach the constituent audiences for each specific survey, we will utilize several outreach methods including mail, phone, internet via Survey Monkey, Constant Contact list, Facebook and Twitter. Use the license database to reach target audiences.

c. **Priority Task** – Promote recreational fishing opportunities and continue to focus on developing innovative outreach, communication and public engagement tools which reach the broadest possible audience.

Desired Task Achievement Date – Ongoing

Obstacle – None

Solution - Work with Recreational Boating and Fishing Foundation to leverage their marketing and recreational outreach programs (i.e. Fishing License Marketing Program, Take Me Fishing, Vamos A Pescar).

Solution –Work with Park Service to develop and pilot a tackle loaner program at one License Free Fishing Area. Develop and conduct additional youth/family fishing events or programs.

Solution – Expand communications with tackle shops by developing and maintaining a robust communication pathway with tackle shops and local destination marketing offices.



Appendix 2. Fisheries Service FY 2015 Accomplishments

Following is a list of some of the activities Fisheries Service accomplished that benefit sport fishermen during FY 2015. These activities may use FR&D and FM&P special funds or other Fisheries Service funding sources.

PROTECT, CONSERVE AND ENHANCE FISHERIES RESOURCES

Oysters – Considered a keystone species of Chesapeake Bay providing numerous benefits to the ecosystem (e.g. benthic habitat, filtration of algae and silt, ecosystem diversity, etc.), such that benefits of oysters extend beyond just their own population. Oysters are at historically low levels. The amount and quality of oyster habitat is also greatly reduced compared to historic amounts.

- Based upon recommendations from the Environmental Impact Statement (EIS) for oysters and in accordance with the Chesapeake Bay Watershed Agreement to restore 10 (5 in MD and 5 in VA) tributaries by 2025, Maryland has completed major restoration efforts in two tributaries: Harris Creek and the Little Choptank River (reported last year as being underway). The Tred Avon River project is now underway for 2015-2016.
- Conducted annual dredge-based surveys of oyster bars. These assessments have provided biologists and managers with information on oyster spatfall intensity, observed mortality, and more recently on parasitic infection status in Maryland's Chesapeake Bay. The long-term nature of the data set is a unique and valuable aspect of the survey that gives a historical perspective and allows the discernment of trends in the oyster population
- Performed the following GIS and database activities to support the DNR Shellfish and Aquaculture divisions:
 - i. Maintained and updated aquaculture lease database
 - ii. Enhanced Aquaculture Siting Tool by incorporating five additional data types (blinds, pound nets, bottom types, AEZ and pre-approved lease areas)
 - iii. Created SAV survey maps
 - iv. Computed percentage of seed and shell plantings in oyster sanctuaries
 - v. Generated oyster spat fall intensity time series maps
 - vi. Initiated project to create online map of oyster gear areas for Maryland's watermen

Electronic Reporting (Blue Crabs and Striped Bass) - Expanded implementation of the FACTS E-Reporting system from a limited blue crab pilot to an expanded blue crab and striped bass pilot. The FACTS system includes a hailing requirement to improve accountability; requires daily reporting when fishing so that harvest information is more accurate; and provides daily harvest totals to allow for timely quota monitoring.

- An electronic reporting coordinator has been hired to recruit and train license holders
- Striped Bass check stations are required to use the system when any voluntary participant comes to their facility.
- Expected to expand to voluntary use for all finfish by January 2016.

Striped Bass – Chesapeake Bay's marquee sport and charter fisheries. Staff worked in concert with the ASMFC Atlantic Striped Bass Management Board to finalize Addendum IV to Amendment 6 of the Interstate

Fishery Management Plan for Atlantic Striped Bass. The new Addendum establishes new fishing mortality (F) reference points, as recommended by the 2013 benchmark stock assessment, and associated management measures to reduce fishing mortality to a level at or below the proposed target within two years in the Chesapeake Bay and one year along the coast. Management measures were modified to account for these reductions – the first significant management actions in the recreational striped bass fishery in 20 years.

Brook Trout – The only native trout to Maryland. Considered “canaries in the coal mine” for being among the first aquatic resources to respond to degradation in a stream or watershed. A highly sought after sport fish to Marylanders and tourists, and source of economic importance to western Maryland counties.

- Completed Fishery Management Plan review for brook trout.
- Conducted sampling for the second round of the five-year statewide brook trout monitoring plan.
- Obtained State Wildlife Grant funding for two research projects that are focused on water temperature and flow budgets, genetic relationships of fluvial populations, and invasive parasites.
- Briefed DNR Secretary on the status and issues involved with the Upper Savage River special brook trout management area.
- Continued intensive population monitoring efforts in the Upper Savage River special brook trout management area to assess the impact of the no harvest and no bait fishing regulation implemented on January 1, 2007.
- Developed a “Brook Trout homepage” for the DNR Fisheries website, providing information and updates to the public on brook trout research, management, and angling. (<http://dnr2.maryland.gov/fisheries/Pages/brook-trout/index.aspx>)
- Presented information on brook trout resources, management, the Upper Savage River special brook trout management area, and brook trout angling to Mid-Atlantic Council of Trout Unlimited, Nemacolin Chapter of Trout Unlimited, Youghiogheny Chapter of Trout Unlimited, Outdoorsman Radio Show, and Fishing Maryland Magazine.

Black Bass – The most sought after sport fish in Maryland providing significant socio-economic value.

- Continued the cooperative agreement to fund a study to improve the survival of largemouth bass held in live wells. An annual summary of work completed by Mississippi State University on live well work is forthcoming. Work presented by the principal investigator of that study at American Fisheries Society Annual Meeting (Portland, OR) demonstrated that nearly 1/4th of Maryland Bass Nation clubs and few anglers are using recommendations of *Keeping Bass Alive*. This highlights the need for additional outreach and improved infrastructure to deliver information from this work.
- The permit for tournament directors was slightly amended to include new recommendations and requirements that are based on *Keeping Bass Alive* and live well study work.
- Declining catch rates have been verified in the tidal Potomac River, with results presented at the American Fisheries Society Annual Meeting (Portland, OR, August 2015) and are currently prepared for a special publication in *Fisheries Research*. The results have also been presented to SFAC, Potomac River Fisheries Commission, various stakeholders, and prepared as part of on-line reading material. The effect of changing regulations was evaluated and catch-and-return areas may be the best solution. However, this solution will not prevent habitat loss; only help lower fishing mortality during periods of high angling effort and catch rates.

Yellow Perch –

- Developed a technique for creating biological reference points that take into account the impact of development on sustainable harvest.
- Conducted an experimental stocking project at Allens Fresh (Charles County). Approximately 56,000 yellow perch were discretely marked by life stage and stocked to enhance wild populations in this popular fishing area and provide marked hatchery fish that can be used to assess the juvenile population status.

Shad – A historically valuable sport fishery that also serves an important ecological role as a forage fish. A harvest moratorium has been in place since 1980 given its low abundance.

- Continued restoration stocking and assessment project for Patapsco River shad and herring species and documented survival of hatchery-origin larvae and juveniles in putative nursery areas.
- Completed Choptank River Hickory Shad restoration. Data analysis from the adult recapture survey indicates that wild contributions steadily increased each year from a low of 26% in 2001 to a high of 75% in 2014. Wild contribution exceeded 75% since 2011. Virgin spawners now substantially contribute to the spawning population and the relative abundance estimates vary without trend over recent years. This static pattern of relative abundance and age composition analysis has continued since 2010. All analyses indicate that the Choptank River Hickory Shad population is now self-sustaining and would not appreciably benefit from additional hatchery inputs.

Rare, threatened and endangered (RTE) species - Various RTE species are managed under the jurisdiction of the DNR Wildlife & Heritage Service (WHS). Hatcheries Division staff collaborated with WHS and Resource Assessment Service (RAS) to produce aquatic organisms to meet management needs. These efforts included “head start” projects (Eastern hellbender), population reintroduction (blackbanded sunfish) and culture research (freshwater mussels).

Invasive Species – The introduction and spread of invasive species such as blue and flathead catfish and Northern snakehead threaten ecologically and socio-economically important native fish species due to their predatory impacts and competition for habitat and food.

- Maintained Invasive Species Component within the MD fishing Challenge contest with annual prizes for sport fishermen who ‘catch and keep’ blue catfish, flathead catfish or Northern snakehead.
- Continued research into invasive blue catfish and snakeheads in coordination with the multiagency, Invasive Catfish Task Force.
- Developed an Aquatic Nuisance Species Action Plan that is currently under review by the Invasive Species Matrix Team (ISMT).

Fish Habitat – Utilization of state of the art tools to integrate the valuation of important fish habitat supports informed decision making at the local, state, and federal levels.

- Developed maps that depict where anadromous fish spawning habitat is located in Maryland and its conservation priority status (high, mid and low) based on relationships of spawning success indicators, salinity, and development (impervious surface).
- Worked with Canaan Valley Institute and other non-profit funding partners to implement a large scale streambank and instream habitat restoration project on the upper mainstem Savage River to benefit water quality and the native brook trout population.

- Continued cooperative effort to create Best Management Practices to guide Marcellus Shale gas well development in Maryland.
- Continued annual monitoring on upper Potomac River to evaluate impacts of noxious benthic algal blooms on macroinvertebrate communities and water quality and gamefish distribution.

Fish Health – Understanding fish health in wild stocks, aquaculture, bait fish, the pet industry, and hatchery stocking is the most fundamental need for protection, conservation and wise use to ensure healthy fish stocks.

- Prepared draft Fish Health Management Policy for review.
- Continued investigation of mycobacteriosis in striped bass. Collaborated with NCBO and environmental consultants to investigate mycobacteriosis in Chesapeake Bay Striped Bass. This work was funded by a Chesapeake Bay Program Goal Implementation Team Sustainable Fisheries grant. The goal was to learn more about disease dynamics and environmental factors that may exacerbate mycobacteriosis, and to recommend a useful fish health indicator for the Bay Program. An effective Chesapeake Bay fish health indicator does not currently exist. Initial work indicated a link between water quality, mycobacterium density, and disease prevalence in Striped Bass. Prevalence of mycobacteriosis in age-1 striped bass could be an appropriate health indicator for the Bay. This initial work would benefit from additional research and collaboration among all Chesapeake Bay fish health researchers.
- Conducted experimental finfish health survey in a single tributary. This multi-year experimental work will serve to fine-tune the techniques and processes that are needed to fully implement a fish health index for Maryland's Chesapeake Bay waters.

Fish Passage – Targeted removal of stream blockages allows ecologically and socio-economically important fish species to once again utilize historical upstream habitat that serves an important role for spawning, and other life history needs.

- The Patapsco River Restoration partners completed the 90% Design for the Bloede Dam Removal Project and are scheduled to begin the first phase of the project: relocation of the sewer line, beginning in January/February 2016.
- The design work and permits were completed for the Centreville Dam Removal Project. Removal of the dam is scheduled for August/September 2015.

Regulations and Fishing Penalties - During FY 2015, 175 recreational fishing licenses and four commercial fishing licenses were suspended. Additionally, three commercial fishing authorizations were revoked. These continued actions to suspend and revoke fishing licenses have provided increased deterrence to illegal activities.

Fisheries Management Plans – Completed the 2014 Fishery Management Annual Report to the Legislative Committees. The report updates the status and management actions of 22 plans that address 32 species. Four fishery management plans were reviewed: American Eel, Summer Flounder, Atlantic Croaker/Spot and Spanish/King Mackerel.

Atlantic Sturgeon - Deployed and continue to maintain an acoustic receiver array that covers the main stem Chesapeake Bay and major historic Atlantic Sturgeon spawning tributaries such as the Pocomoke, Nanticoke, Choptank, Potomac, Patuxent and Chester rivers. This array is targeted to monitor endangered Atlantic Sturgeon populations, but will also detect any similarly tagged animals such as Striped Bass, sharks, sea turtles and marine mammals. It will effectively monitor tagged Blue Catfish to assess the migratory behavior and distribution of this invasive species. NOAA funding was obtained to conduct Atlantic Sturgeon habitat and early life history research in Marshyhope Creek. This tributary recently indicated the only known Atlantic Sturgeon spawning

population in Maryland's Chesapeake Bay. It is evident that mature fish occur in putative spawning habitats, but it is unknown whether these animals successfully spawn and produce fertilized eggs, larvae and juvenile sturgeon. Partners from NCBO, the University of Maryland Center for Environmental Science (UMCES) and Delaware Fish & Wildlife worked to assess spawning habitat and to evaluate whether successful spawning and recruitment occurs.

Forage Fish – Information from existing monitoring programs was integrated into five indicators of forage fish status for resident striped bass in Maryland's portion of Chesapeake Bay. This prototype indicator could be used to meet both ASMFC and Bay Program requirements.

North Branch of the Potomac River watershed – Identified key problems facing the North Branch of the Potomac River and took the following actions:

- Installed recording temperature monitors to provide temperature data to US Army Corps of Engineers (ACOE). The Corps will use these data to develop a model for cold water management in the Zero Creel for all trout species (catch and return for all trout species with no tackle restrictions) section of the North Branch Potomac River (from the UPRC WWTP discharge downstream to the Route 956 bridge at Pinto).
- Continued installing fish habitat structures in the Savage River Reservoir to enhance populations in the lake. The reservoir was drained several years ago and habitat was lost. Staff identified key areas where habitat was needed to restore and enhance the recovering fish populations.
- Provided comments regarding the discharge permit renewal for Verso Corporation (papermill in Luke) and will continue to work with MDE and the papermill to ensure adequate thermal protection is afforded to the North Branch Potomac River.

Inland Temperature and Water Quality Database –

- Imported all 2014 temperature and water quality data collected statewide by Inland Fisheries staff into database.
- Converted and imported all temperature and water quality data collected in Western Region 2 from 2003 to 2013 and Central Region from 2010 to 2013.
- Developed a GIS map linked to raw temperature data.

PROVIDE AND ENHANCE FISHING OPPORTUNITIES, INCLUDING ACCESS

Blue Crab – Worked with crabbers interested in offering blue crab charter trips to develop regulations to facilitate the developing crab charter sector. This will allow increased opportunity for crabbers interested in establishing a crab charter business as well as increased opportunities for recreational crabbers to enjoy charter crabbing trips.

Angler Access Map – Maintained on the Fisheries Service website. This interactive map helps anglers find new fishing opportunities and provides information on location, parking, ease of access (including ADA facilities), available fish species, regulations, stocking, managing agency contacts, fees and other.

Hatcheries

- Completed construction of Mettiki Hatchery Phase I and implemented full production run in summer 2015.
- Albert Powell Hatchery received an "A" classification for fish health. This rating is granted only after a facility tests pathogen-free for three consecutive years. This is an important milestone for the program,

which has committed to strict biosecurity and fish health protocols over the past five years. We expect that Bear Creek Hatchery will achieve a similar rating in fall 2015.

GIS

- Enhanced angler access map by adding USGS stream gage locations
- Performed maintenance on fishing access application based on input from the public and Fisheries Service employees
- Updated and published License Free Fishing Area information
- Created artificial reef maps for MARI annual volunteer survey

License Free Fishing Areas – Added 4 new License Free Fishing Areas (LFFAs). These include Canton Waterfront Park (Baltimore City), Federalsburg Municipal Park (Caroline County), Gambrill State Park (Frederick County), and Janes Island State Park (Somerset County). Removed 5 areas that either had safety concerns or were not meeting fishing quality or performance objectives for LFFAs. These included Hull Street Recreational Pier (Baltimore City), Worton Bridge over Still Pond Creek (Kent County), Manokin River Park (Somerset County), Cedar Hall Landing dock (Worcester County) and Porter’s Crossing Road bridge (Worcester County). Taken together, these changes expand the geographic distribution of LFFAs while keeping the total number of areas approximately the same. They also represent progress toward the long-term goal of ensuring that most Maryland residents live within one hour’s drive of an area where they have the opportunity to fish recreationally year-round without purchasing a fishing license.

Artificial Reefs

- Working under MARI/DNR permits and with DNR oversight, CBF deployed 150 additional reef balls at Memorial Stadium Reef, located between Hart-Miller Island and Tolchester at Gales Lumps. The reef balls were constructed by volunteers from MSSA, Stevenson University, and various school groups. The reef balls were deployed in the new 1.5 acre area that was added to Memorial Stadium Reef Ball site (permit modification) in 2014.
- Began monitoring Hail Cove shallow water stone reef with beach seines (inside edge of reef to shore) and eel pots. The Hail Cove project was completed in 2014 in partnership with USFWS along Eastern Neck Refuge Shoreline, lower Chester River.
- Completed second year of MARI angler survey; produced summary report with description of species, catch rates and fish size distribution on artificial vs. natural reefs using data from angler logbooks. During winter/spring 2015, recruited volunteers for third year of volunteer logbook study. Fishing period for this survey began May 30, 2015.
- Last phase of Bill Burton Pier Reef (Talbot side) completed July/August 2014. Approximately 300 reef balls placed in this section of the reef by CBF, working under DNR oversight. Reef balls were pre-set with oyster spat in tanks prior to deployment.
- Deployment of 1000 tons of natural rock boulder (granite) at Love Pt Reef, December 2014.
- Worked with DNR power plant division to develop reefing plan with Dominion to accept recycled concrete rubble from the Cove Pt facility. Reef plan was finalized in fall of 2014, material was inspected in spring of 2015, and preparations were made for deployment. (Deployment of five barge loads of material was completed by August 31, 2015).
- Secured donated concrete reef material from playground demolition at Benedictine School in Ridgely.

Prepared interagency agreement to deploy material in in-house DNR marine construction unit. Mobilized June 2015, and completed deployment July 2015.

- Submitted application to renew MDE state license for artificial reefs (21 original MARI reef sites). Project is also being reviewed by MHT and Army Corps.

PROVIDE SUSTAINABLE ECONOMIC OPPORTUNITIES

Oyster Aquaculture - Growth in this industry should benefit the Bay ecosystem through reduced fishing pressure on the wild fishery, increased oyster biomass, and improved habitat throughout Maryland waters.

- Provided shellfish health inspection services to Maryland growers on oyster production lots, and to Maryland hatcheries and growers for shellfish transfer permit applications.
- Provided products and services from Piney Point Aquaculture Center to support development of the aquaculture industry in Maryland.

GIS

- Merged trout data to census data to support a cost/benefit analysis of the trout fishery in Maryland
- Updated charter boat data for online web map

Charter/Guide Map – Continued to maintain list of Charter boats/Guides included on the Charter/Guide map on the DNR Webpage.

PROMOTE AND PROTECT FISHERIES RESOURCES THROUGH PUBLIC OUTREACH AND EDUCATION.

Black Bass

- Held annual Black Bass Roundtable to convey information and to gain feedback from user groups and neighboring states fisheries agencies on tidal water black bass fisheries in Maryland.
- Instituted Volunteer Angler Survey to determine satisfaction with tidal water black bass management. Staff is still assessing the input and survey is ongoing.

Invasive Species – Worked on a DNR-wide educational campaign to raise awareness about zebra mussels.

Marylanders Grow Oysters - Initiated this citizen-based stewardship program that engages thousands of Maryland residents and school students to enhance the Bay's oyster population. MGO is the largest oyster gardening program in the state, active in 30 tributaries, offering a hands-on connection to oysters and the Bay as the participants grow oysters at their piers in cages made by inmates, who are also active as Bay stewards.

Recreational Fishing Promotion

- Completed 11th annual Maryland Fishing Challenge contest. Proposed and worked with SFAC and contest sponsors and supporters to restructured cash prize to implement drawings for regional prizes, Finale grand prize and smaller cash prizes, and add a master angler component. These changes were designed to improve the contest's achievement of its objective – to showcase Maryland as a great fishing destination and increase the number of youth, families and individuals participating in sport fishing.

Youth Fishing

- Provided support to organized youth fishing events. Stocked trout or hybrid sunfish for rodeo events and provided angling education and guidance (knot tying, casting, habitat, proper tackle selection) at several fishing rodeos and other events, which included summer day camps, DNR Park Quest finale, and National Hunting and Fishing day.
- Provided 10,000 Rainbow Trout eggs for Trout Unlimited's "Trout in the Classroom" project.
- Supported DNR's "Sunfish in Schools" program by providing fish, food, and technical support. This program expanded to more than 100 classrooms in fall 2015.
- Continued partnership with Bass Pro Shops to hold quarterly random drawings to select winners from among members of the Maryland Youth Fishing Club who posted entries to the youth angler's log. Quarterly winners were awarded \$50 Bass Pro Shops gift cards.
- Worked with Maryland Fishing Challenge (MFC) supporters to secure guided fishing trips to be awarded to Maryland Youth Fishing Club members during the MFC finale as part of the Youth Component.

GIS

- Created a black bass spatial data layer for the tidal bass fishery. This included layers related to catch surveys, submerged structure, a fish forage index, sanctuaries, catch and return areas, 6-knot speed zones and nursery habitats.
- Created a web map of black bass release locations for distribution to tournament directors.
- Create spatial layer for state record fish to be shared with the public

